

REMARKS

Claims 1-36 are pending in the application. All claims have been rejected.

The Examiner prompted Applicants to update the status of the parent application on page 1 of the specification. Accordingly, Applicants have amended page 1 of the specification to reflect that the parent application has been abandoned.

The Examiner rejected claims 26-30 and 33 under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter of applicant's invention. *Office Action*, ¶ 2. The Examiner asserted that claims 26 and 33, in particular, were unclear because the "ball is identified with the material." *Office Action*, ¶ 2. Applicants have amended claims 26 and 33 to claim "the ball is comprises a metal" and "the ball is comprises PTFE," respectively. Accordingly, Applicants acknowledge with appreciation the rejection of these claims and respectfully request withdrawal of the rejections to claims 26 and 33 as well as claims 27-30, which depend from claim 26, as being indefinite.

Claims 1-2, 5-11, 21, 24-25 and 35 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,370,507 ("Dunn et al.") in view of U.S. Patent No. 5,542,450 ("King et al."). *Office Action*, ¶ 5. The Examiner asserted that Dunn et al. disclose a chemical pump *Fig. 1* (interpreted to include vacuum pumps) having a non-return valve 26 wherein the valve 26 has an o-ring 34 and a ball 29 positioned so that when the ball is seated on the o-ring, fluid flow is prevented and when there is a predetermined pressure upstream of the ball, the ball is moved from the o-ring thereby permitting fluid flow. *Office Action*, ¶ 5. The Examiner acknowledged that Dunn et al. fail to disclose that the o-ring comprises an elastomeric material having an increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers. *Office Action*, ¶ 5.

The Examiner further asserted that "King et al. disclose use of o-rings in check valves, with the o-rings comprising perfluoroelastomers for the purpose of obtaining better sealing." *Office Action*, ¶ 5. The Examiner asserted that the property of providing increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers is inherent to perfluoroelastomers. *Office Action*, ¶ 5. Thus, "it would have been obvious to one of ordinary skill in the art...to have provided o-rings comprising perfluoroelastomers in the apparatus of Dunn et al. for the purpose of obtaining better sealing." *Office Action*, ¶ 5.

Applicants respectfully traverse the rejections of claims 1-2, 5-11, 21, 24-25 and 35 as being unpatentable over Dunn et al. in view of King et al. Independent claims 1-2, 8-9, 11 and 21 claim an insert comprising or made from an elastomeric material. As acknowledged by the Examiner, Dunn et al. fail to teach an insert comprising or made from an elastomeric material as claimed. Applicants respectfully submit that the Examiner has provided no support for the assertion that “the property of ‘providing increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers’ [as claimed in claims 1-2, 8-9, 11 and 21,] is inherent to perfluoroelastomers.” *Office Action*, ¶ 5. Thus, the Examiner has not met the burden under *M.P.E.P.* § 2112(IV).

Moreover, assuming arguendo that increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers (*see claims 1-2, 8-9, 11 and 21*) is inherent to perfluoroelastomers, the Examiner’s assertion that “King et al. disclose...o-rings comprising perfluoroelastomers for the purpose of obtaining better sealing” is not supported by the teachings of King et al. *Office Action*, ¶ 5, *emphasis added*. King et al. teach an apparatus for metering fluids having an internal check valve assembly. *Col. 1 Ln. 6-17*. One type of check valve has a spring-loaded plunger that “is forced against a valve seat thereby sealing the valve.” *Col. 5 Ln. 17-28*. The plunger can seat directly against the valve seat, or the plunger may have an o-ring. *Col. 5 Ln. 30-32*. King et al. further teach that if an o-ring is used, it can be made from *inter alia* perfluoroelastomers. *Col. 5 Ln. 39-42*. King et al. fail to teach that a perfluoroelastomer o-ring will provide better sealing over any other material or over simply mechanical sealing against the valve seat. Accordingly, there is no suggestion or motivation to combine King et al. with Dunn et al. to achieve the invention as claimed in claims 1-2, 5-11, 21, 24-25 and 35, and in contrast to the Examiner’s assertion, it would not have been obvious to one of ordinary skill in the art to have provided in the apparatus of Dunn et al., an o-ring comprising a perfluoroelastomer for the purpose of obtaining better sealing.

In addition, Applicants respectfully submit that one of ordinary skill in the art at the time the invention was made would not have been motivated to combine the teachings of Dunn et al. and King et al. to achieve a non-return valve having an insert made from or comprising an elastomeric material having an increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers as claimed in claims 1-2, 8-9, 11 and 21. In particular, one of ordinary skill in the art would not have been motivated to modify the apparatus of Dunn et al.

to include an o-ring comprising a perfluoroelastomer (*see King et al. Col. 5 Ln. 39-44*) as suggested by the Examiner. *Office Action*, ¶ 5. Dunn et al. teach that one problem with prior art reciprocating pumps is leakage in the check valve seals. *Col. 1 Ln. 37-40*. Dunn et al. further teach that the retainer means in prior art pumps have a recess in the body of the pump that is sized so that an o-ring fits “snugly against the outer perimeter of the recess,” which can result in distortion of the o-ring. *Col. 2 Ln. 31-35*. The invention of Dunn et al. solves this problem by increasing the diameter of the recess to at least 0.01 inches larger than the outside diameter of the o-ring. *Col. 2 Ln. 41-49*. “This allows the o-ring to float or move slightly, but the o-ring will automatically position itself...so as to make a fluid tight seal with the floating ball member.” *Col. 2 Ln. 51-54*; *see also Col. 7 Ln. 3-6*. Thus, Dunn et al. teach modifying the recess to accommodate the existing fluoroplastic o-ring rather than modifying the o-ring itself. Indeed, Dunn et al. repeatedly emphasize the importance of using fluoroplastic material for all wetted surfaces. *See Col. 1 Ln. 14-25 and 55-60; Col. 5 Ln. 12-15*. Accordingly, Dunn et al. teach away from using an elastomeric material as claimed in claims 1-2, 8-9, 11 and 21 and thus, one of ordinary skill in the art at the time the invention was made would not have been motivated to combine the teachings of Dunn et al. with King et al. to achieve the invention as claimed. In view of the foregoing remarks, Applicants respectfully submit that independent claims 1-2, 8-9, 11 and 21 are not rendered obvious by Dunn et al. in view of King et al.

In addition, independent claim 8 further claims “a cast body part.” Applicants respectfully submit that Dunn et al. fail to teach that any of the body parts are cast body parts. Indeed, Dunn et al. simply teach that the body and all wetted parts are made of a fluoroplastic material and fail to teach that the body or any other body parts comprise a cast body part as claimed in claim 8. *Col. 7 Ln. 28-30*. Accordingly, for this further reason, Applicants submit that Dunn et al., either alone or in combination with King et al., does not achieve independent claim 8.

Similarly, since claims 5-6, amended claim 7 and claims 10, 24 and 35 depend either directly or indirectly from independent claims 1-2, 8-9, 11 and 21, they are not obvious over Dunn et al. in view of King et al. for at least the reasons set forth above with respect to claims 1-2, 8-9, 11 and 21.

The Examiner further asserted with respect to claims 7 and 22 that Dunn et al. disclose that the body is made of a plastic material “...which here is taken to include all known forms of making plastic parts including molding i.e. casting.” *Office Action*, ¶ 5. The Examiner then asserted

that the limitations pertaining to casting render claims 7 and 22 product by process claims for which only the structure is limiting. *Office Action*, ¶ 5.

Applicants respectfully submit that in addition to the distinctions mentioned above with respect to independent claims 1 and 21 from which amended claim 7 and claim 22 respectively depend, Dunn et al., either alone or in combination with King et al., fail to achieve claim 7 as now amended and claim 22. Applicants have amended claim 7 to claim that the “~~valve body is a cast~~ comprises a cast body part” as claimed in original claim 8 and claim 22. Applicants submit that Dunn et al. fail to teach that any of the fluoroplastic body parts comprise a cast body part as claimed in amended claim 7 and claim 22. In addition, Dunn et al. fail to teach any form of making the body parts and simply do not teach that any body parts comprise moldings or castings. *Office Action*, ¶ 5. Moreover, amended claim 7 and claim 22 do not include process steps, implied or otherwise, as asserted by the Examiner. *Office Action*, ¶ 5. Claims 7 and 22 claim a structural limitation in that the valve body comprises a cast body part; thus, these claims are not product by process claims. Accordingly, Applicants submit that claims 7 and 22 are not obvious for the further reason that Dunn et al. either alone or in combination with King et al. does not disclose each and every element claimed in amended claim 7 and claim 22.

The Examiner further asserted that “the device according to the combination of Dunn et al. and King et al. necessarily performs the method recited in claim 11 in its usual and normal operation.” *Office Action*, ¶ 5. Applicants respectfully submit that one of ordinary skill in the art at the time the invention was made would not have been motivated to combine Dunn et al. with King et al. for the reasons set forth above with respect to independent claim 11. Specifically, the Examiner acknowledged that Dunn et al. fail to achieve the invention as claimed in claim 11 (i.e. Dunn et al. fail to teach providing a valve seat having an insert comprising or made from an elastomeric material). *Office Action*, ¶ 5. In addition, the teachings of King et al. do not support the assertion that King et al. disclose o-rings comprising perfluoroelastomers “for the purpose of obtaining better sealing” as asserted by the Examiner. *Office Action*, ¶ 5. Indeed, King et al. fail to teach that a perfluoroelastomer o-ring will provide better sealing over any other material or over simply mechanical sealing against the valve seat. Moreover, Dunn et al. teach modifying the recess to accommodate the fluoroplastic o-ring rather than modifying the o-ring itself. Accordingly, as mentioned above, Dunn et al. teach away from using an elastomeric insert, as claimed in claim 11, and there is no suggestion or motivation to combine Dunn et al. with King et al.

Thus, claim 11 is not rendered obvious by Dunn et al. either alone or in combination with King et al.

The Examiner rejected claims 1-2, 5-10, 12-13, 15-16, 18, 20 and 35 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,478,216 (“Neward”) in view of King et al. The Examiner asserted that Neward discloses a vacuum pump having a non-return valve 60 wherein the valve has an o-ring 45 and a ball 44 positioned so that when the ball is seated on the o-ring, fluid flow is prevented and when there is a predetermined pressure upstream of the ball, the ball is moved from the o-ring permitting fluid flow. *Office Action*, ¶ 6. The Examiner acknowledged that Neward fails to teach an o-ring comprising an elastomeric material having an increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers.

The Examiner further asserted that King et al. teach o-rings comprising perfluoroelastomers for the purpose of obtaining better sealing. *Office Action*, ¶ 6. The Examiner asserted that the property of providing increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers is inherent to perfluoroelastomers. *Office Action*, ¶ 6. The Examiner further asserted that “It would have been obvious to one of ordinary skill in the art...to have provided...o-rings comprising perfluoroelastomers [in the apparatus of Neward] for the purpose of obtaining better sealing, as recognized by King et al.” *Office Action*, ¶ 6.

Applicants respectfully traverse the rejections of claims 1-2, 5-10, 12-13, 15-16, 18, 20 and 35 as being unpatentable over Neward in view of King et al. Independent claims 1-2 and 8-9 claim an insert comprising or made from an elastomeric material. As acknowledged by the Examiner, Neward fails to teach an insert comprising or made from an elastomeric material as claimed. As mentioned above with respect to independent claims 1-2, 8-9, 11 and 21, Applicants respectfully submit that the Examiner has provided no support for the assertion that “the property of ‘providing increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers’ [as claimed in claims 1-2 and 8-9] is inherent to perfluoroelastomers.” *Office Action*, ¶ 6. Thus, the Examiner has not met the burden under M.P.E.P. § 2112(IV).

As stated above, assuming arguendo that perfluoroelastomers inherently having an increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers, the Examiner’s assertion that “King et al. disclose...o-rings comprising perfluoroelastomers for the purpose of obtaining better sealing” is not supported by the teachings of King et al. *Office*

Action, ¶ 5, emphasis added. King et al. teach that the plunger “is forced against a valve seat thereby sealing the valve.” *Col. 5 Ln. 17-28.* However, notwithstanding the Examiner’s assertion to the contrary, King et al. fail to disclose that a perfluoroelastomer o-ring will provide better sealing over any other material or over simply mechanical sealing against the valve seat. Accordingly, there is no suggestion or motivation to combine King et al. with the teachings Neward as asserted by the Examiner to achieve the invention as claimed in claims 1-2, 5-10, 12-13, 15-16, 18, 20 and 35, and in contrast to the Examiner’s assertion, it would not have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in the apparatus of Dunn et al., an o-ring comprising a perfluoroelastomer for the purpose of obtaining better sealing.

In addition, Applicants respectfully submit that one of ordinary skill in the art at the time the invention was made would not have been motivated to combine the teachings of Neward and King et al. to achieve a non-return valve having an insert made from or comprising an elastomeric material having an increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers as claimed in claims 1-2 and 8-9. In particular, one of ordinary skill in the art would not have been motivated to modify the apparatus of Neward to include an o-ring comprising a perfluoroelastomer (*see King et al. Col. 5 Ln. 39-44*) as suggested by the Examiner. *Office Action, ¶ 6.* More specifically, Neward teaches a vacuum limiter 40 for a pump 10 which limits “the amount of vacuum pressure that the pump 10 can pull.” *Col. 2 Ln. 37-40.* The pump 10 includes a check valve 60 having a spring 43, a steel ball 44 and an o-ring 45. *Col. 3 Ln. 13-15.* The spring 43 holds the ball 44 in place against the o-ring 45 to bias the valve 60 to a closed position, and contact between the ball 44 and the o-ring 45 provides a seal preventing air from entering the vacuum limiter. *Col. 3 Ln. 15-23.* Neward fails to teach that one o-ring over another would provide a better seal in the vacuum limiter. In addition, Neward fails to teach that an o-ring comprising a perfluoroelastomer, in particular, would be useful for obtaining better sealing and thus, there is no suggestion or motivation to combine Neward with King et al. to achieve a non-return valve having an insert comprising or made from an elastomeric material having an increased resistance to a fluorine containing gas as compared to resistance provided by fluoroelastomers as claimed in claims 1-2 and 8-9.

In addition, Neward neither alone nor in combination with King et al. achieves claims 1-2 and 8. Claims 1-2 and 8 claim that the ball is displaceable by pressurized gaseous fluid in the

inlet or by gas pressure on an upstream side thereof. Neward teaches that “the atmosphere contacts the steel ball.” *Col. 3 Ln. 28-20, emphasis added.* Neward further teaches that when the pressure in the chamber 30 is reduced, “the pressure on the steel ball 44 is less on the inside of the vacuum limiter than on the area of the steel ball 44 exposed to atmosphere.” *Col. 3 Ln. 26-30.* Indeed, the spring 43 maintains the ball 44 in a closed position until a vacuum is created causing the spring to compress. *Col. 3 Ln. 26-35.* Thus, Neward teaches that the ball is displaceable by vacuum (i.e. negative pressure) and not by a pressurized gaseous fluid in the inlet or by gas pressure on an upstream side thereof as claimed in claims 1-2 and 8. *Col. 3 Ln. 26-30, Figure 4.* Accordingly, not only does Neward teach away from claims 1-2 and 8, but Neward in combination with King et al. does not achieve claims 1-2 and 8. Thus, Applicants respectfully submit that claims 1-2 and 8 are not rendered obvious by Neward either alone or in combination with King et al.

Similarly, Neward fails to achieve independent claim 9. Claim 9 claims that “in use...when there is a predetermined gas pressure in said flowpath upstream of the ball, the ball is moved from said valve seat insert by gas pressure.” *Emphasis added.* As mentioned above, Neward teaches that the ball is displaceable by vacuum (i.e. negative pressure) and not by a predetermined gas pressure upstream of the ball as claimed in claim 9. *Col. 3 Ln. 26-30, Figure 4.* Accordingly, Neward not only teaches away from claim 9, but Neward fails to achieve the invention as claimed. Thus, Applicants respectfully submit that claim 9 is not rendered obvious by Neward either alone or in combination with King et al.

In addition, independent claim 8 further claims that the non-return valve comprises “a cast body part.” Applicants respectfully submit that Neward fails to teach that the apparatus comprises a cast body part as claimed in claim 8. Accordingly, for this further reason, Applicants submit that Neward either alone or in combination with King et al. does not achieve independent claim 8.

Similarly, since claims 5-7, 10, 12-13, 15-16, 18, 20 and 35 depend either directly or indirectly from independent claims 1-2 and 8-9, they are not obvious in view of Neward combined with King et al. for at least the reasons set forth above with respect to claims 1-2 and 8-9.

The Examiner further asserted with respect to claim 7 that Neward discloses that the body is made of a plastic material “...which here is taken to include all known forms of making plastic parts including molding i.e. casting.” *Office Action, ¶ 6.* The Examiner then asserted that the

limitations pertaining to casting in claim 7 render this claim a product by process claim for which only the structure is limiting. *Office Action*, ¶ 6.

Applicants respectfully submit that in addition to the distinctions mentioned above with respect to independent claim 1, Neward either alone or in combination with King et al. fails to achieve amended claim 7. As mentioned above, Applicants have amended claim 7 to claim that the “valve body is a casting comprises a cast body part.” Applicants submit that Neward fails to teach that any body parts comprise a cast body part as claimed in amended dependent claim 7. In addition, Neward fails to teach any form of making body parts and simply does not teach or suggest that any body parts comprise moldings or castings. *Office Action*, ¶ 6. Applicants further submit that amended claim 7 does not include process steps, implied or otherwise, as asserted by the Examiner. *Office Action*, ¶ 6. Amended claim 7 claims a structural limitation in that the body comprises a cast body part; thus, claim 7 is not a product by process claim. Accordingly, Applicants respectfully submit that claim 7 is not obvious for the further reason that Neward either alone or in combination with King et al. does not achieve amended claim 7.

The Examiner rejected claims 3-4, 12-13, 15-16, 18, 20, 26-34 and 36 as being unpatentable over the combination of Dunn et al. and King et al. in further view of U.S. Patent Application Publication No. 2002/0047025 A1 (“Ray”). *Office Action*, ¶ 7. The Examiner acknowledged that neither Dunn et al. nor King et al. disclose that the ball is made of a ceramic material or coated with a non-stick material. *Office Action*, ¶ 7. The Examiner asserted that Ray teaches that it is known to have a ball with a hard spherical core “...taken here to include all known hard materials including Ceramic, Steel, etc.” and “for the purpose of providing desired positioning of the ball relative to the seat...” *Office Action*, ¶ 7. The Examiner further asserted that Ray also discloses applying a coating of non-stick material for the purpose of obtaining a good reliable seal and that “It would have been obvious to one of ordinary skill in the art...to have provided in the combination of Dunn et al. and King et al. a ball comprising a hard spherical core for the purpose of providing desired positioning of the ball relative to the seat as recognized by Ray.” *Office Action*, ¶ 7.

Applicants respectfully traverse the rejection of claims 3-4, 12-13, 15-16, 18, 20, 26-34 and 36 as being unpatentable over Dunn et al. combined with King et al. and in further view of Ray. Applicants respectfully submit that there is no suggestion or motivation to combine Dunn et al., King et al. and Ray, and that Dunn et al., King et al. and Ray, either alone or in combination, fail

to achieve dependent claims 3-4, 12-13, 15-16, 18, 20, 26-34 and 36. Dependent claims 3 and 31-32 claim that the ball comprises a ceramic material. Applicants respectfully submit that neither Dunn et al., King et al. nor Ray teach that the ball comprises a ceramic material. Ray teaches that “the ball is made of a hard material, e.g. steel,” and that the use of a steel ball is particularly advantageous. *Page 1, ¶¶ 0003, 0010, 0023 and 0024*. Ray, however, fails to teach that the ball comprises a ceramic material as claimed in claims 3 and 31-32. In addition, Dunn et al., King et al. and Ray all fail to teach a ceramic ball coated with a non-stick material as claimed in claim 4 which depends from claim 3.

Moreover, as mentioned above, the Examiner acknowledged that Dunn et al. fail to achieve claims 1-2, 8-9 and 21 from which claims 3-4, 12-13, 15-16, 18, 20, 26-34 and 36 depend (i.e. Dunn et al. fail to teach an insert comprising or made from an elastomeric material). In addition, the teachings of King et al. do not support the assertion that King et al. disclose o-rings comprising perfluoroelastomers for the purpose of obtaining better sealing. King et al. fail to teach that a perfluoroelastomer o-ring will provide better sealing over any other material or over simply mechanical sealing against the valve seat. Moreover, Dunn et al. teach modifying the recess to accommodate the fluoroplastic o-ring rather than modifying the o-ring itself. Accordingly, as mentioned above, Dunn et al. teach away from using an elastomeric insert, as claimed in claims 1-2, 8-9 and 21, and there is no suggestion or motivation to combine Dunn et al. with King et al. Thus, claims 1-2, 8-9 and 21 from which claims 3-4, 12-13, 15-16, 18, 20, 26-34 and 36 depend are not rendered obvious by Dunn et al. or King et al. either alone or in combination with Ray.

The Examiner further asserted in regard to claim 34 that the exhaust gas containing fluorine is reflective of intended use only, and that the device of Dunn et al. is inherently capable of such use. *Office Action, ¶ 7*. Applicants respectfully submit that Dunn et al. fail to teach that the chemical pump is capable of handling an exhaust gas containing fluorine. Accordingly, for this further reason, dependent claim 34 is not rendered obvious by Dunn et al. either alone or in combination with King et al. and Ray.

The Examiner rejected claims 3-4 and 36 as being unpatentable over the combination of Neward and King et al. in further view of Ray. *Office Action, ¶ 8*. The Examiner acknowledged that neither Neward nor King et al. disclose that the ball is made of a ceramic material or coated with a non-stick material. *Office Action, ¶ 8*. The Examiner asserted that Ray teaches that it is known to have a ball with a hard spherical “...taken here to include all known hard materials in-

cluding Ceramic, Steel, etc.” and “for the purpose of providing desired positioning of the ball relative to the seat...” *Office Action*, ¶ 8. The Examiner asserted that “It would have been obvious to one of ordinary skill in the art...to have provided in the combination of Neward and King et al. a ball comprising a hard spherical core for the purpose of providing desired positioning of the ball relative to the seat as recognized by Ray.” *Office Action*, ¶ 8. The Examiner further asserted that “Ray also discloses applying a coating of non-stick material.” *Office Action*, ¶ 8.

Applicants respectfully traverse the rejection of claims 3-4 and 36 as being unpatentable over Neward combined with King et al. and in further view of Ray. Applicants respectfully submit that there is no suggestion or motivation to combine Neward, King et al. and Ray, and that Neward, King et al. and Ray, either alone or in combination, fail to achieve dependent claims 3-4 and 36. Dependent claim 3 claims that the ball comprises a ceramic material. Applicants respectfully submit that neither Neward, King et al. nor Ray teach that the ball comprises a ceramic material. In addition, Dunn et al., King et al. and Ray all fail to teach a ceramic ball coated with a non-stick material as claimed in claim 4 which depends from claim 3.

Moreover, the Examiner acknowledged that Neward fails to achieve claim 1 from which claims 3-4 and 36 depend (i.e. Neward fails to teach an insert comprising or made from an elastomeric material). In addition, the teachings of King et al. do not support the assertion that King et al. disclose o-rings comprising perfluoroelastomers for the purpose of obtaining better sealing. King et al. fail to teach that a perfluoroelastomer o-ring will provide better sealing over any other material or over simply mechanical sealing against the valve seat. Moreover, Neward fails to teach that one o-ring over another would provide a better seal in the vacuum limiter. Thus, there is no suggestion or motivation to combining Neward and King et al. In addition, as mentioned above, Neward either alone or in combination with King et al. fails to teach that the ball is displaceable by pressurized gaseous fluid as claimed in claim 1 from which claims 3-4 and 36 depend. Indeed, Neward teaches that the ball moves from the closed position when a vacuum is generated inside the vacuum limiter. *Col. 3 Ln. 26-30*. Accordingly, Neward teaches away from independent claim 1 and fails to achieve claim 1 from which claims 3-4 and 36 depend. Thus, for these further reasons claims 3-4 and 36 are not rendered obvious by Dunn et al. or King et al. either alone or in combination with Ray.

The Examiner rejected claims 14, 17, 19 and 23 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Dunn et al. and King et al. and in further view of U.S. Patent

Application Publication No. 2001/0028858 (“Houze et al.”). *Office Action*, ¶ 11. The Examiner acknowledges that neither Dunn et al. nor King et al. teach that the body part comprises a metal cast part. *Office Action*, ¶ 11. The Examiner asserted that Houze et al. disclose a vacuum pump with a body having a cast metal part for the purpose of obtaining the desired body shape at a low cost. *Office Action*, ¶ 11. The Examiner asserted that “It would have been obvious to one of ordinary skill in the art...to have provided in the combination of Dunn et al. and King et al. a body part comprising a cast metal for the purpose of obtaining a desired body shape at a low cost.” *Office Action*, ¶ 11.

Applicants respectfully traverse the rejection of claims 14, 17, 19 and 23 as being unpatentable over Dunn et al. combined with King et al. and in further view of Houze et al. Claims 14, 17, 19 and 23 claim a non-return valve having a valve body that is or comprises a metal casting or having a cast body part that is or comprises a metal. Applicants respectfully submit that the Examiner’s assertion that Houze et al. disclose a vacuum pump having a cast metal part for the purpose of obtaining the desired body shape at a low cost is not supported by the teachings of Houze et al. *Office Action*, ¶ 11, *emphasis added*. Houze et al. teach a vacuum pump body made from cast iron. *Pages 1-3, ¶¶ 0016, 0017, 0029, 0036 and 0037*. Houze et al. fail to teach that the purpose for using cast iron is to obtain a desired body shape at a low cost as asserted by the Examiner. Accordingly, there is no suggestion or motivation to combine Houze et al. with Dunn et al. or King et al. to achieve the invention as claimed in claims 14, 17, 19 and 23. Thus, Applicants respectfully submit that it would not have been obvious to one of ordinary skill in the art to have provided a body part comprising a cast metal in Dunn et al. or King et al., either alone or in combination, for the purpose of obtaining a desired body shape at a low cost as asserted by the Examiner. *Office Action*, ¶ 11.

In addition, there is no suggestion or motivation to combine Houze et al. with Dunn et al. for the further reason that Houze et al. teach away from using a fluoroplastic housing as taught by Dunn et al. *See Dunn et al. Col. 1 Ln 19-21 and claims 3, 11, 15 and 19-20*. Dunn et al. fail to teach a valve body that is or comprises a metal casting or a cast body part that is or comprises a metal as claimed in claims 14, 17, 19 and 23. Indeed, Dunn et al. fail to teach that any body parts are cast body parts. Moreover, Dunn et al. emphasize the importance of using a fluoroplastic material. *Col. 1 Ln. 14-25 and 55-60; Col. 5 Ln. 12-15*. Thus, Dunn et al. teach away from using a body that is or comprises a metal casting or a cast body part that is or comprises a metal

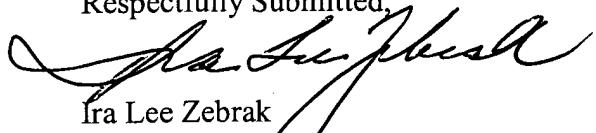
as claimed in claims 14, 17, 29 and 23. In contrast to Dunn et al., Houze et al. teach a cast iron vacuum pump body. *Pages 1-3, ¶¶ 0016, 0017, 0029, 0036 and 0037*. Houze et al. fail to teach a vacuum pump body made from a plastic material as taught by Dunn et al. Indeed, Houze et al. teach that the invention provides an effective connection between the tubes (described as stainless steel or copper, for example) and the vacuum pump body that ensures “excellent thermal conduction between the tube and the vacuum pump body 1.” *Pages 1-3, ¶¶ 0016, 0020 and 0047*. Accordingly, Houze et al. teach away from utilizing a plastic pump body as taught by Dunn et al. Thus, there is no suggestion or motivation to combine Houze et al. with Dunn et al. in order to achieve a non-return valve having a valve body that is or comprises a metal casting or a cast body part that is or comprises a metal as claimed in claims 14, 17, 19 and 23.

Moreover, as mentioned above, the Examiner acknowledged that Dunn et al. fail to achieve claims 1-2, 8 and 21 from which claims 14, 17, 19 and 23 depend (i.e. Dunn et al. fail to teach an insert comprising or made from an elastomeric material). In addition, the teachings of King et al. do not support the assertion that King et al. disclose o-rings comprising perfluoroelastomers for the purpose of obtaining better sealing. King et al. fail to teach that a perfluoroelastomer o-ring will provide better sealing over any other material or over simply mechanical sealing against the valve seat. Moreover, Dunn et al. teach modifying the recess to accommodate the fluoroplastic o-ring rather than modifying the o-ring itself. Accordingly, as mentioned above, Dunn et al. teach away from using an elastomeric insert, as claimed in claims 1-2, 8 and 21, and there is no suggestion or motivation to combine Dunn et al. with King et al. Thus, claims 1-2, 8 and 21 from which claims 14, 17, 19 and 23 depend are not rendered obvious by Dunn et al. or King et al. either alone or in combination with Houze et al.

In view of the foregoing remarks, Applicants request entry of the amendments to the claims which do not raise any issues of new matter, do not require further consideration or search, and which simply clarify the claim language, and respectfully submit that claims 1-6, 8-25, 27-32 and 34-36 and amended claims 7, 26 and 33 are not rendered obvious by Dunn et al., Neward, King et al., Ray or Houze et al. either alone or in combination. Accordingly, Applicants respectfully submit that claims 1-36 are allowable and that the application be allowed and promptly passed to issue.

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